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National Heart Institute  
June 1, 1965

Dr. Francis H. C. Crick  
Laboratory of Molecular Biology  
University Postgraduate Medical School  
Hills Road  
Cambridge, England

Dear Francis:

I am sending separately 5, 2, and 0.5 A<sup>260</sup> units of UpUpG, UpGpA and UpApA. We only have very small amounts of UGA and UAA on hand at this moment, but will undoubtedly make some more within a month or so. We have plenty of UUG on hand and can easily send more if needed. I should have gotten the samples off to you sooner and hope that they are still useful to you.

GCG is a very good codon for alanine when assayed with E. coli sRNA. I have tested GCU, GCC, GCA, and GCG. Alanine-sRNA responds to each trinucleotide. Holley sent us some of his purified yeast alanine-sRNA and we are trying to see whether this purified sRNA fraction responds to every synonym codon.

I am looking forward to seeing your preprint concerning "wobble". The Information Exchange on Nucleic Acids is really just getting started and the mailing list for England and Europe has not yet been made out (except for you and a few others). Any suggestions?

Our last MS (VII) contained a number of errors, (including the glutamine-terminator codon) which we corrected in proof. I really appreciate your comments.

We tested both UGA and UGG with Trypt-sRNA. A small response was obtained with UGG, but none was found with UGA. These trinucleotides did not stimulate the binding to ribosomes of sRNA corresponding to other amino acids. Cys-sRNA did not respond to UGA, but did respond to UGC.

In an earlier letter you said that AUG was written in on one of the tables for Leu. CUG or UUG could have been written in for Leu, ~~but~~ AUG corresponds to Met. We have assayed all of the triplets now except three, UUA, GGA and GGG. Each triplet however, has not been assayed with every AA-sRNA thus far, but the results with the 16 new triplets are summarized on the enclosed table. Everything worked out as expected; however, I am still unsure of AGU, AGC, AGA and AGG, and also the possible nonsense triplets indicated in the previous papers. We are trying to do some more

work with them and are also testing other trinucleotides at lower  $Mg^{++}$  concentrations and under other conditions.

Tentative plans for the coding session at the Gordon Conference on nucleic acids are as follows: Crick, Wahba, Khorana's lab, and myself. Then there will be somewhat shorter presentations by someone from Fresco's lab, Beljanski, Streisinger's lab and either Weisblum or von Ehrenstein. Work from Doty's lab will be presented in Lipmann's session or possibly in this one. Do you have any other suggestions? Marianne just wrote that she will not be able to attend. Tentatively, if each of the first four speakers has 25 minutes (including questions and answers) and the others 15 minutes, the timing should be about right. Please let me know if you need more or less time.

A review or summary of the status of the code certainly would be useful. However, it need not be a consensus or summary of results reported at the Gordon Conference. Possibly a good feature of the conference has been that the discussions are not published or summarized. So many of the discussions center around preliminary results. The expectation of a published summary might in a small way serve as a restraining influence. But certainly the status of the code could be summarized - via publication or more informally via the Information Exchange - by an individual without a direct connection with the Gordon Conference. In this way the format of the conference would remain the same and the information would be made available to all. Why don't you write it.

Regards,

Marshall